

REMARKS

This is in response to the Office Action mailed on March 24, 2004, and the references cited therewith.

Claims 1-18 are now pending in this application. No claims are amended herein.

§103 Rejection of the Claims

Claims 1-7, 9, 15 and 17 were rejected under 35 USC § 103(a) as being unpatentable over Cohen (U.S. Patent No. 5,174,289). Claim 12 was rejected under 35 USC § 103(a) as being unpatentable over Ben-Haim (U.S. Patent No. 6,066,094). The rejections are traversed and reconsideration is respectfully requested.

With respect to the rejections of claims 1-7, 9, 15, and 17, the office action asserts that Cohen teaches identifying an infarcted area in a ventricle and further asserts that it would be obvious to pre-excite sites in proximity to such an infarcted area because Cohen teaches the use of ventricular sequential pacing to shorten the QT interval. Applicant does not agree with this assertion because pre-excitation of sites in proximity to an infarcted ventricular area does not necessarily result in a shortened QT interval. Conversely, ventricular sequential pacing of a ventricle in order to shorten the QT interval would not necessarily result in sites in proximity to an infarcted area of the ventricle being pre-excited. Sequential pacing for the purpose of shortening the QT interval is pacing which results in a more simultaneous activation of the entire ventricle. The objective of the pre-excitation therapy as disclosed in the present application, on the other hand, is to cause ventricular regions in proximity to an infarcted area to contract before other regions of the ventricle. As explained in the specification of the present application, the purpose of pre-exciting sites near an infarcted area of the ventricle to lessen the mechanical stresses to which the infarcted region is subjected during systole and hence reduce the stimulus for deleterious remodeling. An infarcted region of the ventricle and the area in proximity thereto may have a decreased conduction velocity as compared with the rest of the ventricle. In that case, pre-excitation of sites in proximity to the infarcted area could actually cause a lengthening, rather than a shortening, of the QT interval. In any event, pre-excitation of ventricular regions in proximity to an infarcted area is simply not related to sequential pacing for the purpose of

shortening the QT interval, and such pre-excitation pacing is neither taught nor suggested by the Cohen reference. Reconsideration and withdrawal of the rejections based upon the Cohen reference is respectfully requested.

With particular respect to the rejections of claims 7 and 17, the office action points to Figs. 30a, 30b, and 31 of Cohen. Applicant does not believe that the cited portions of the Cohen reference relate in any way to an impedance sensor for detecting changes in wall motion and wall thickness in an area in proximity to an infarct. Applicant therefore respectfully requests withdrawal of the rejections on this basis as well as for the reasons stated above.

With respect to the rejection of claim 12, the office action asserts that Ben-Haim, with reference to Fig. 12C, teaches identifying an ischemic region 120 in a ventricle and delivering pacing pulses to an area 124 in proximity to the ischemic region. What Ben-Haim actually teaches, however, is moving the pacing site from a location 108 near the ischemic region 120 to a location 124 which is near a well-oxygenated region 122 and farther away from the ischemic region 120 (See col. 24, lines 6-14 which refer to Fig. 12C). This is opposite to pre-excitation of sites in proximity to an infarcted area. As explained elsewhere (at col. 24, lines 1-10), the authors of the Ben-Haim reference believe that an early-excited region of a ventricle experiences an increased plateau phase and hence a greater workload than a later excited region. Although the Ben-Haim authors realize that a later-excited region experiences a greater initial contractile force due to an increased preload, they apparently believe that the shorter plateau phase causes the later-excited region to experience a lessened workload. The Ben-Haim authors do not seem to appreciate, however, that a later-excited region of a ventricle also experiences a greater afterload and hence must contract against a greater opposing force. In any event, the Ben-Haim reference does not teach or suggest what is recited by claim 12 and appears to actually teach away from applicant's claimed invention. Reconsideration and withdrawal of the rejection of claim 12 based upon the Ben-Haim reference is respectfully requested.

Allowable Subject Matter

Claims 8, 10, 11, 13, 14, 16 and 18 were objected to as being dependent upon a rejected base claim, but were indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. In view of the foregoing remarks, applicants respectfully request withdrawal of the objections.

Conclusion

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at (847) 432-7302 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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7-26-04

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner of Patents, MS: Amendment, P.O. Box 1450, Alexandria, VA 22313-1450, on this 21 day of July, 2004.

Name

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Signature

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